

PA gene fragment expressed in these studies represents the PA₆₃ protease-cleaved fragment of the full-length 83 kDa protein that is active in vivo (Gordon 1995). The PCR reaction product was digested with *Xho*I and *Xba* and ligated into the pCI vector which had been cut with the same two restriction enzymes.

IN THE CLAIMS:

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23. (Three Times Amended) A nucleic acid based immunogenic composition for protecting a mammalian subject against challenge with lethal toxin of *B. anthracis*, said immunogenic composition comprising a polynucleotide which encodes a full-length, mature mutated lethal factor (LF) protein or an immunogenic fragment of LF protein, said polynucleotide being operably linked to a promoter which drives expression of the full-length, mature mutated LF protein or the immunogenic fragment of LF protein in cells of the mammalian subject; wherein the full-length, mature mutated LF protein comprises a sequence which is the same as the sequence of the full-length, mature wild-type LF protein except for a mutation that eliminates the metalloproteinase activity of the full-length, mature, mutated LF protein, and wherein the immunogenic fragment of LF protein comprises amino acid 42 through amino acid 285 of SEQ ID NO. 2.

SUB F10
24. (Twice Amended) The nucleic acid based immunogenic composition of claim 23, wherein the nucleic acid based composition further comprises a polynucleotide which encodes a full-length, mature *B. anthracis* protective antigen (PA) protein or an immunogenic fragment thereof to the subject, wherein said polynucleotide which encodes a full-length mature *B. anthracis* PA protein or an immunogenic fragment thereof is operably linked to a promoter which drives expression of the full-length, mature PA protein or the immunogenic fragment thereof in cells of the mammalian subject, wherein said full-length mature *B. anthracis* PA protein comprises amino acid 30 through amino acid 764 of SEQ ID NO. 4, and wherein said immunogenic fragment of the *B. anthracis* PA protein comprises amino acid 204 through amino acid 764 of SEQ ID NO. 4.

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31. (Twice Amended) The nucleic acid based immunogenic composition of claim 23

wherein the polynucleotide encodes a polypeptide comprising sequentially amino acid 34 through amino acid 719 of the amino acid sequence set forth in SEQ ID NO. 2, an amino acid other than glutamic acid, and amino acid 721 through amino acid 809 of the sequence set forth in SEQ ID NO. 2.

41. (Once Amended) The nucleic acid based immunogenic composition of claim 23 wherein the polynucleotide is incorporated into a mammalian expression vector.

42. (Once Amended) The nucleic-acid based immunogenic composition of claim 24 wherein the polynucleotide that encodes the full-length, mature mutated LF protein or immunogenic fragment thereof and the polynucleotide that encodes the full-length, mature PA protein or immunogenic fragment thereof are incorporated into the same or separate mammalian expression vectors.

Please cancel claims 43 and 44 without prejudice or disclaimer.

Please add the following claims

45. (New) The nucleic acid based composition of claim 41 wherein the mammalian expression vector is a viral expression vector.

46. (New) The nucleic acid based composition of claim 41 wherein the eukaryotic expression vector is a eukaryotic expression plasmid.

47. (New) The nucleic acid based composition of claim 42 wherein the polynucleotide that encodes the full-length, mature, mutated LF protein and the polynucleotide that encodes the full-length mature PA protein are incorporated into the same or different viral expression vectors.

48. (New) The nucleic acid based composition of claim 42 wherein the polynucleotide that encodes the full-length, mature, mutated LF protein and the polynucleotide that encodes the full-length mature, mutated PA protein are incorporated into the same or different eukaryotic